

RECONNAISSANCE FROM CARROLL, MONTANA, TO YELLOWSTONE NATIONAL PARK.

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# ZOOLOGICAL REPORT.

BY

GEO. BIRD GRINNELL.

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## LETTER OF TRANSMITTAL.

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YALE COLLEGE, NEW HAVEN, CONN.,

June 1, 1876.

SIR: I beg leave to hand you herewith, as a partial report on the zoology of the region traversed by your expedition last summer, a list of the mammals and birds observed on the trip. In making out this list, I have taken care to give only such species as I actually saw and identified either in life or by their remains. I have added a list of such species as have been noticed in the immediate vicinity of the Yellowstone Park, combining the observations made by Mr. Merriam, of Hayden's survey, 1872, with my own during the past summer.

It may not be out of place here, to call your attention to the terrible destruction of large game, for the hides alone, which is constantly going on in those portions of Montana and Wyoming through which we passed. Buffalo, elk, mule-deer, and antelope are being slaughtered by thousands each year, without regard to age or sex, and at all seasons. Of the vast majority of the animals killed, the hide only is taken. Females of all these species are as eagerly pursued in the spring, when just about to bring forth their young, as at any other time.

It is estimated that during the winter of 1874-'75 not less than 3,000 elk were killed for their hides alone in the valley of the Yellowstone, between the mouth of Trail Creek and the Hot Springs. If this be true, what must have been the number for both the Territories? Buffalo and mule-deer suffer even more severely than the elk, and antelope nearly as much. The Territories referred to have game laws, but, of course, they are imperfect, and cannot, in the present condition of the country, be enforced. Much, however, might be done to prevent the reckless destruction of the animals to which I have referred, by the officers stationed on the frontier, and a little exertion in this direction would be well repaid by the increase of large game in the vicinity of the posts where it was not unnecessarily and wantonly destroyed. At one or two points, notably Camp Baker, efforts have been made to drive off the skin hunters, and with such success that the officers have very fine hunting within easy reach. The general feeling of the better class of frontiersmen, guides, hunters, and settlers, is strongly against those who are engaged in this work of butchery, and all, I think, would be glad to have this wholesale and short-sighted slaughter put a stop to. But it is needless to enlarge upon this abuse. The facts concerning it are well known to most Army officers and to all inhabitants of the Territory. It is certain that, unless in some way the destruction of these animals can be checked, the large game still so abundant in some localities will ere long be exterminated.

I am, sir, very respectfully, your obedient servant,

GEO. BIRD GRINNELL.

Col. WM. LUDLOW,

*Chief Engineer Department Dakota, St. Paul, Minnesota.*

# ZOOLOGICAL REPORT.

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BY GEO. BIRD GRINNELL.

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## LIST OF MAMMALS AND BIRDS.

### CHAPTER I.

#### MAMMALS.

##### FELIDÆ.

###### 1. FELIS CONCOLOR, *Linn.*

MOUNTAIN LION; COUGAR.

Although not a common species, a few of these animals are killed in the mountains every winter.

The skins of the Cougar were formerly imported in large quantities from the east and from California for purposes of trade with the Indians. A few years since, a good skin was sometimes sold for seven or eight buffalo-robos; but at present they have little or no commercial value. A single individual of this species was seen by our party on the Yellowstone River, near the mouth of Alum Creek.

###### 2. LYNX RUFUS, *Raf.*

BAY LYNX; WILDCAT.

Very abundant in the mountains.

###### 3. LYNX CANADENSIS, *Raf.*

CANADA LYNX; CATAMOUNT.

Not a common species, though taken occasionally. I saw a few skins at Fort Peck, and was told that it was sometimes killed in the Yellowstone Park.

##### CANIDÆ.

###### 4. CANIS OCCIDENTALIS, *Rich.*

GRAY WOLF; TIMBER WOLF.

Although the Gray Wolf is always killed whenever the opportunity offers, it still exists in considerable numbers wherever the Buffalo are abundant. On the return march, just before entering

the Judith Gap, I saw one pack of twelve, another of nine, and, besides these, many individuals singly or by twos and threes. Buffalo were very numerous here, and, although not much hunted, enough were killed to furnish abundant food for the wolves. This species was also abundant near the Judith River, and during the hours of darkness their howlings were heard almost constantly.

Wolfing, as it is called, is an established industry in Montana; and, being pursued only in winter, it gives employment and support to a large number of teamsters, steamboat-hands, and others who are necessarily idle at this season. The method is sufficiently simple. The wolfer, starting out, kills a deer, a buffalo, or some other large animal, and, thoroughly poisoning it with strychnine, leaves it for a day or two. When he returns to it, he finds from one to a dozen wolves coyotes, and foxes lying dead about the carcass. As wolf-skins, large and small, *i. e.*, gray wolves and coyotes, bring \$2.50 apiece at the trader's store, it is not unusual for two men to make \$1,000 or \$1,500 at this work in a winter.

Almost all the dogs seen among the Assinaboines, Crows, and Gros Ventres of the Prairie, appeared to have more or less wolf-blood in their veins, and many of them would have been taken for true wolves had they been seen away from the Indian camps.

#### 5. CANIS LATRANS, *Say*.

##### PRAIRIE WOLF; COYOTE.

This species is abundant between Carroll and Fort Ellis; being, I think, much more common on the prairie than in the mountains. I have always found it most numerous in a plain country, where there are deep washed ravines, to which the animals may retire during the day, and in holes in the sides of which the young are brought forth. When searching for fossils in such places during the past summer, I have often come upon an old female lying at the mouth of a hole in the bank, and surrounded by her litter, of from four to eight half-grown pups. At my appearance, the family would spring to their feet, stare at me for a few seconds, and then two or three would dart into the hole, as many wildly scramble up the bank, and the rest would start off up the ravine at a good round pace, looking back over their shoulders every few steps, as if there were a constant struggle between their fears and their curiosity.

A puppy, perhaps three months old, was captured while we were in camp on Crooked Creek. He had taken refuge in a hole in the bluffs, and was dug out and brought to camp. Although so young, he was utterly wild and vicious; snapping at any one that ventured to touch him, and refusing to eat. His unceasing efforts to escape were at length successful, and one morning we found that during the night he had gnawed off his fastenings and departed.

#### 6. VULPES ALOPEX MACRURUS, *Baird*.

##### PRAIRIE FOX.

This is an abundant species throughout the country traversed by our party. It is often found dead near the carcasses poisoned for wolves.

#### 7. VULPES VELOX, *Aud & Bach*.

##### SWIFT; KIT FOX.

This pretty little fox is common on the prairies of Dakota and Montana, and, as it is a species that has but few enemies, it is often quite tame. I have sometimes come upon one of these animals as it lay sleeping in the sun at the mouth of its burrow, and have been amused to see it, after a brief examination of me, stretch, yawn, and then with its tail held straight up in the air, and an appearance of the utmost unconcern, trot slowly into the hole. This has generally two openings; and sometimes, while you are examining one entrance, the Swift may be seen inspecting you from the other.

## MUSTELIDÆ.

8. *MUSTELA AMERICANA*, *Turton*.

## MARTEN.

The Marten is said to be quite abundant in the mountains of the Yellowstone Park, and it doubtless is found some distance down the Missouri River. I saw skins at Fort Peck which I was told had been taken in the immediate neighborhood.

9. *PUTORIUS VISON*, *Rich*.

## MINK.

This species was quite abundant all through the mountains. Some very fine dark specimens were seen along Bridger Creek near Fort Ellis.

10. *GULO LUSCUS*, *Sabine*.

## WOLVERENE; SKUNK-BEAR.

No living individuals of this species were seen by any of the party; but we noticed their tracks quite often while in the park, and saw many skins in Bozeman. Hunters there informed me that they were seldom killed, except in the severest weather of the winter. In this region, they were spoken of as the "Skunk-bear"; farther south they are called "Carcajou". The young, when first born, are said to be snow-white in color. Although this species is seldom found far from the mountains, an individual was killed during the winter of 1872-'73 near Fort Stevenson on the Missouri River. It had probably wandered out on to the prairie from the high Bad Lands of the Little Missouri.

11. *LUTRA CANADENSIS*, *Sab*.

## OTTER.

Although nowhere a very abundant species, the Otter occurs perhaps as frequently on the Missouri River as on the purer mountain-streams. The furs taken on this river, however, are by no means so valuable as those which come from the mountains; being much lighter in color and less glossy. This difference is regarded by trappers and dealers in furs to be due to the muddy character of the Missouri water. Whether this be the case, or whether it is merely an exemplification of the law which obtains with regard to the birds and mammals of the plains as contrasted with those of the mountains, I am unable at present to determine. It seems quite possible, however, that the former explanation is the true one, since animals like the Otter and Beaver, to which latter the above remarks also apply, from the conditions of their lives are but slightly exposed to the modifying influences which act on animals living on the uplands and more or less diurnal in their habits.

The fur of the Otter is highly prized by the Indians; being used by them to tie up the hair, to ornament their "coup-sticks", to cover bow-cases and quivers, and for a variety of other purposes.

12. *MEPHITIS MEPHITICA*, *Baird*.

## SKUNK.

This species is exceedingly abundant throughout Eastern Montana. While ascending the Missouri River, we often saw them on the low benches of alluvium left bare by the rapid falling of the waters. Having slipped or climbed down the almost vertical banks to get to the water, they seemed unable to retrace their steps, and could only escape from their prison by swimming.

At Camp Lewis, these animals were so numerous as to have become a terrible nuisance. Mr. Reed, the post-trader, told me one morning that during the previous night he had been obliged to rise four times to kill Skunks.

13. TAXIDEA AMERICANA, *Baird*.

## BADGER.

The Badger was quite common all through the prairie country over which we passed, but was most often seen in the vicinity of the prairie-dog towns. It is a slow animal, and may easily be overtaken by a man on foot. If unable to reach its hole in time to escape, it will turn and rush toward its pursuer in the most courageous manner; snapping and snarling in such a way as to inspire one with a wholesome respect for it.

## URSIDÆ.

14. PROCYON LOTOR, *Storr*.

## RACCOON.

This species occurs occasionally along the Missouri River.

15. URSUS HORRIBILIS, *Ord*.

## GRIZZLY BEAR.

The Grizzly is rather common in some localities along the Missouri; and from the upper deck of the steamer I saw three one evening digging roots in a wide level bottom. In the Bridger Mountains and in the Yellowstone Park, they were numerous, so much so that we would often see several sets of fresh tracks in a morning's ride. From their abundance in the vicinity of Fort Ellis and Bozeman, it was evident that they were not much disturbed by hunters.

In Bozeman, I was shown two cubs about six months old; and two more sullen and vicious little brutes I never saw. A Black Bear cub of about the same age was as friendly and playful as a puppy; but no one dared to venture within reach of the Grizzlies.

But little seems to be known about the breeding-habits of this bear. It is pretty well established, however, that the young are brought forth about the 15th of January, and that they are then very small, scarcely larger than new-born puppies.

16. URSUS AMERICANUS, *Pallas*.

## BLACK BEAR.

Not nearly so common as the preceding species. Only one living specimen was seen. At a ranch near the bridge over the Yellowstone River, however, I was shown a single skin of the so called Cinnamon Bear, which, I was told, had been taken in the Park.

## SCIURIDÆ.

17. SCIURUS HUDSONIUS, *Pallas*.

## RED SQUIRREL; PINE SQUIRREL.

Red Squirrels were abundant wherever pine timber was found. In the mountains, they seem to feed chiefly on the seeds of the pine; and I frequently came upon little heaps of cones gathered together by the squirrels just as they collect nuts in the East. Most specimens taken in the Yellowstone Park seem to be referable to var. *Richardsonii*, but several killed in the Fire Hole Valley are not to be distinguished from ordinary Connecticut specimens.

18. TAMIAS QUADRIVITTATUS, *Rich*.

## MISSOURI GROUND SQUIRREL.

This pretty little squirrel seems equally at home among the most desolate Bad Lands, where no vegetation is to be found save a few straggling sage-bushes, and amid the dense pine forests

and luxuriant undergrowth of the mountains. They are very gentle and unsuspicious, and would play about in the most unconcerned manner while I was standing within a few feet of them.

Although by no means tree-climbers, in the strict acceptation of the term, I often saw them, while at play or when frightened, ascend the pines to a height of 20 or 30 feet. It would seem that they are not exclusively vegetarian in their diet; for I interrupted one of them while making a meal of the dried carcass of a *Hesperomys*. It sat up, holding the food in its fore feet in the ordinary manner, and gnawing the meat from the back and shoulders. No doubt, in some localities it feeds, partially at least, on grasshoppers, as many of the small rodents of the West are known to do.

#### 19. SPERMOPHILUS TRIDECIM-LINEATUS, *Mitchell*.

##### STRIPED PRAIRIE SQUIRREL.

This species was common everywhere on the prairies. When anything unusual attracts its attention, it raises itself up on its haunches to examine the object of its curiosity. As this approaches, the squirrel gradually lowers itself until at last it is quite flattened out upon the ground. In this position, if the eye is removed from it for a moment, it is very difficult to find it again, as its colors harmonize admirably with the yellowish gray of the soil.

#### 20. SPERMOPHILUS RICHARDSONII, *Cuv.*

##### RICHARDSON'S GROUND SQUIRREL.

This species was not seen until after we had passed Camp Lewis in Montana. Along the North Fork of the Musselshell River it was abundant in the valley, and it was observed in considerable numbers about Camp Baker and Fort Ellis.

In their habits, they resemble the Prairie-dog (*Cynomys*) more nearly than any other species with which I am acquainted. They live in communities, act as do the Prairie-dogs when approached, and are equally hard to secure when shot near the entrance of their burrows. A young one, killed with a charge of fine shot at short range, moved himself over two feet along the smooth surface of a flat rock, on which he had been lying when shot, by convulsive pushes of his hind feet. After I had taken him in my hand, these kickings continued for half a minute or more, although the animal could not have been conscious after the shot struck him.

I several times saw the young of this species playing with one another very prettily. One standing over the other would hold him down and pretend to bite his head and neck, just as we often see young puppies play together.

At Camp Baker, there were many of these animals in and about our camp, and they soon became very tame. Often they would come to the open tent-door, and, sitting on their haunches, would watch the occupants with an appearance of the greatest curiosity. We often tried to catch them alive, but were never successful. They would always manage to slip into some hole that we did not know of, just as our hands were on them. Between Fort Ellis and Bozeman there is quite a large settlement of these animals, and they were more tame here than at any other locality where we met with them.

#### 21. CYNOMYS LUDOVICIANUS, *Baird*.

##### PRAIRIE-DOG.

Quite abundant on the plains near the foot of the mountains.

#### 22. ARCTOMYS FLAVIVENTER, *Bach*.

##### WESTERN WOOD-CHUCK.

Common in the mountains, but rather a shy species, more often heard than seen.

#### 23. CASTOR CANADENSIS, *Kuhl*.

##### BEAVER.

While ascending the Missouri, we saw the houses and "slides" of the Beaver very frequently, and often, just at evening, the animals themselves were observed, sitting on the banks gazing at

the steamer, or feeding on the tender shoots of the cottonwood and willow. They were by no means shy, and would sometimes permit the vessel to pass within a few yards of them without taking to the water.

The streams in the mountains through which we passed were sometimes dammed by the Beavers for miles, and the backwater spreading out over the level valleys makes wide ponds. These in the course of time are partially filled up with the mud carried down by the stream, and when this takes place are deserted by the Beavers, which move away and build another dam somewhere else. As the pond fills, a rank growth of rushes and underbrush springs up, and before long, what was a pretty little lake has become an impassable morass.

The value of the fur of the Missouri River Beaver is diminished by the same causes spoken of in reference to that of the Otter.

### SACCOMYIDÆ.

#### 24. THOMOMYS TALPOIDES, (*Rich.*) *Baird*.

##### GOPHER.

An individual of this species was taken among the high mountains near the head of Gardiner's River. It was running over the snow-drifts when captured.

### MURIDÆ.

#### 25. ZAPUS HUDSONIUS, *Coues*.

##### JUMPING MOUSE.

This species was observed several times in the Bridger Mountains, and again on Cascade Creek near the Yellowstone River.

#### 26. MUS DECUMANUS, *Pallas*.

##### BROWN RAT.

The common Wharf-rat is sufficiently abundant in all the settlements on the Missouri River to be a great nuisance and to do considerable damage. In the trader's store at Fort Peck, they were very numerous, so much so that the trader told me that he had recently poisoned one hundred and fifty in one week.

#### 27. MUS MUSCULUS, *Linn.*

##### HOUSE MOUSE.

Abundant in towns and large settlements, but in isolated ranches replaced by the following species.

#### 28. HESPEROMYS LEUCOPUS SONORIENSIS, *LeConte*.

##### WESTERN WHITE-FOOTED MOUSE.

This species was very abundant along the North Fork of the Musselshell River and along the Yellowstone. In many places, they had deserted the woods and fields and taken to the ranches, where they are quite as annoying as the common House Mouse.

#### 29. ARVICOLA RIPARIA, *Ord*.

##### MEADOW MOUSE.

Very common along the Yellowstone River.

#### 30. FIBER ZIBETHICUS, (*L.*) *Cuv.*

##### MUSKRAT.

Abundant on streams flowing into the Missouri.



## HYSTRICIDÆ.

31. ERITHIZON EPIXANTHUS, *Brandt*.

## YELLOW-HAIRED PORCUPINE.

Quite common along the Missouri and in the "bottoms" of streams flowing into that river. We saw signs of its presence also in the National Park along the Yellowstone River.

## LEPORIDÆ.

32. LEPUS CAMPESTRIS, *Bachman*.

## PRAIRIE HARE.

This species is very abundant in some localities, while in others, quite as favorable for it, it is not found at all. In fact, the abundance or scarcity of the Prairie Hare in any district depends almost altogether on the number of wolves to be found in the same tract of country. Where all the coyotes and gray wolves have been killed or driven off, the hares exist in great numbers; but where the former are abundant, the latter are seldom seen. We saw none near the Missouri River, where the buffaloes, and consequently the wolves, were numerous; but at Camp Baker, where there were scarcely any wolves, the hares were very common.

33. LEPUS ARTEMISIA, *Bachman*.

## SAGE RABBIT.

Very abundant west of the Missouri in suitable localities, but its numbers controlled by the same causes spoken of in regard to the preceding species.

## CERVIDÆ.

34. ALCE AMERICANA, *Jardine*.

## MOOSE.

This species is quite abundant in suitable localities in the Yellowstone Park, although, like all the large game, it has been driven away from the neighborhood of the trail by the constant passage of travelers. We saw signs of its presence in the Bridger Mountains, and were told that there was a famous country for Moose about fifteen miles from the mouth of Trail Creek.

The only living specimen that we saw was a young calf that had been captured by the son of a settler when it was but a few days old. When seen by us, it was probably about three months old, and was a most grotesque object. It was very tame, and would come at the call of its owner.

35. CERVUS CANADENSIS, *Erxleben*.

## ELK.

Elk were rather abundant all through the country which we traversed. They were seen in considerable numbers along the Missouri River, among the Bridger Mountains, and in the Yellowstone Park. Those killed early in September, at the commencement of the rutting-season, were fat and well flavored, furnishing us with delicious meat.

The Elk rut in September, and the young are brought forth late in May or early in June.

The "whistling" of the Elk is heard only for a few days during the early part of September. It is made up of several parts, and is so peculiar a cry that it can hardly be described, much less imitated. The first part consists of a prolonged, shrill whistle, which seems to come to the hearer from a long distance, even though the animal uttering it be quite near at hand. This is followed by a succession of short grunting brays or barks, three or four in number, and the call is completed by a low, smooth bellow. Sometimes the whistle is sounded without the succeeding parts. Withal, the cry is an odd one, and one that once heard will always afterward be recognized.

36. *CERVUS VIRGINIANUS*, *Boddaert*.

## RED DEER; WHITE-TAILED DEER.

This species was by no means abundant in the country through which we passed. We saw a few along the Missouri, and I noticed one in the Judith Mountains; but on the whole they were seldom seen.

37. *CERVUS MACROTIS*, *Say*.

## MULE DEER; BLACK-TAILED DEER.

The Black-tailed Deer, as it is usually called in the Missouri River country, is an abundant species in Eastern Montana. It is quite unsuspicious, and, except where it has been much hunted, will often permit the hunter to fire two or three shots at it before it takes to flight. This species, and the same may be said of all large game in that section of the country, is at present most recklessly slaughtered for the hides alone. It will soon, unless some means are taken for its protection, be unknown in the regions where it is now so plentiful.

## ANTELOPIDÆ.

38. *ANTILOCAPRA AMERICANA*, *Ord*.

## PRONG-HORNED ANTELOPE.

Everywhere abundant on the plains, the antelope forms one of the most pleasing and attractive features of those barren wastes. Although where they have been much hunted they are difficult to approach, they are very unsuspicious and curious where they have been accustomed to seeing and mixing with large animals. About Camp Baker and between that post and Fort Ellis, there are large droves of cattle which roam at will over the prairie. The antelope become used to the presence of these large animals, and are often seen mingling with the herds when feeding or resting.

One day while out from Camp Baker in search of Tertiary fossils, my companion and myself stopped on the borders of a little stream to rest and cook some food. The saddle-horses and pack mule were picketed near at hand; a fire had been kindled, and we were discussing some broiled venison, when two antelope suddenly appeared over the brow of a bluff about seventy-five yards distant. On seeing us, they scarcely hesitated, but trotted gracefully on toward us and would, I have no doubt, have come quite up to us, if it had not been that my companion shot them both when they were still about forty yards distant. When in the buffalo country, antelope, if the wind was right, would often approach very near me, several times coming to within a few yards of where I was standing.

It is well known that the female antelope sometimes has horns and is sometimes without them. Observations extended over several years, together with the testimony of several plainmen, among them Charles Reynolds, a hunter of seventeen years' experience and a man of close observation, lead me to conclude that the horned does are always barren. I have myself examined a great number of doe antelopes with and without horns, and have never seen one of the former class that gave evidence of having produced or being about to have young. Nor have I ever seen a hornless doe that was barren. The horns on the does vary from one to three inches in length, have no prong, and are soft and easily bent. Their length no doubt depends in a measure upon the age of the animal. Those that I have seen lack the hard bony core which is found in the horns of the perfect males.

The barren does are always fat, and on this account are, when it is possible, selected by the hunter in preference to the other members of the herd.

## OVIDÆ.

39. *OVIS MONTANA*, *Cuv*.

## BIGHORN; MOUNTAIN SHEEP.

The Bighorn occurs in considerable numbers in the Judith Mountains and in the Yellowstone Park, away from the trail; but they are so wary that they are not often seen. As is well known, they

affect the most rugged and barren country, and they are perhaps more plentiful in the Bad Lands of the Judith and Missouri Rivers than anywhere else.

On the Cone Butte and Sweet Grass Mountains, which are covered for half their height with a talus of platter-like blocks of trachyte, the sheep in their passage up and down the sides of the hills have worn regular paths among and over the loose blocks, and it is only by following these paths that the ascent can be made on the east and south.

### BOVIDÆ.

#### 40. BOS AMERICANUS, *Gmelin*.

##### BUFFALO; BISON.

No Buffalo were seen while we were ascending the Missouri River until just before we reached Carroll. From that place westward, they were occasionally observed until we reached the Judith Gap, although, owing to the presence in the region through which we were passing of the Sioux and Crows, they were not abundant. On our return march, we saw great numbers of them before reaching the Gap, but none afterward until we were quite near the Missouri.

The statement that the herds of bulls that are everywhere met with during the autumn consist of individuals driven away from the main herd by their stronger rivals may, I think, be doubted. It is said that these assemblages are not seen in spring before the rutting-season. It seems more probable that during the late summer and autumn, many of the old and strong bulls exhausted by the fatigues of the rutting-season, thin in flesh, and generally run down, are unable to keep up with the active and constantly-moving herd of cows and young animals, and devote all their energies to recruiting for the winter. Early in the spring, they rejoin the herd, and remain with it until the end of July.

During the past autumn the Buffalo have proceeded down the Missouri River much farther than is usual. They have been quite numerous a few miles north of Fort Berthold, Dakota, and a few stragglers have been seen near Painted Woods, about twenty-five miles above Bismarck.

The so-called "Mountain Buffalo" was abundant in the Yellowstone Park.

## CHAPTER II.

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### BIRDS.

#### TURDIDÆ.

##### 1. TURDUS MIGRATORIUS, *Linn.*

###### ROBIN.

This species was abundant along the Missouri River, and was also seen in considerable numbers in the mountains about Camp Baker and in the Yellowstone Park.

##### 2. TURDUS SWAINSONI, *Cab.*

###### OLIVE-BACKED THRUSH.

Quite common along the Missouri above Bismarck.

##### 3. OREOSCOPTES MONTANUS, (*Townsend.*) *Bd.*

###### MOUNTAIN MOCKINGBIRD.

I first saw this species on Little Crooked Creek, thirteen miles west of Carroll. It was abundant, and doubtless had bred there, as I took some very young birds. It was generally started from the ground, whence it would fly to the top of some little sage-bush, where it would sit jerking its tail and constantly uttering low cries of anxiety. They were quite shy, and I was often obliged to follow them for some distance before I could secure them.

This species was abundant in the valley of the Yellowstone River.

##### 4. MIMUS CAROLINENSIS, (*Linn.*) *Gray.*

###### CATBIRD.

Quite common along the Missouri River, and very abundant in the Yellowstone Park and in the mountains generally.

##### 5. HARPORHYNCHUS RUFUS, (*Linn.*) *Cab.*

###### BROWN THRUSH; THRASHER.

This species was seen occasionally in the Missouri River bottom.

#### CINCLIDÆ.

##### 6. CINCLUS MEXICANUS, *Sw.*

###### WATER-OUZEL; DIPPER.

On Cascade Creek, near the Upper Falls of the Yellowstone, we first met with this interesting species. Although tolerably familiar with the accounts of its habits given by various authors, I

must confess to having experienced a ludicrous feeling of astonishment the first time I saw the bird walk unconcernedly down a sloping rock until its head disappeared under the water. It repeated this performance several times, occasionally rising to the surface as if forced up by the water, and then immediately diving again. When carried down a few yards by the force of the current, it would fly a short distance up the stream and dive from the wing.

With the help of a good glass I saw from the top of the cañon two of these little birds flying about over the river where it boiled and surged along below the Lower Falls.

### SAXICOLIDÆ.

#### 7. SIALIA ARCTICA, *Sic.*

ARCTIC BLUEBIRD; WESTERN BLUEBIRD.

One of the most abundant birds in the wooded region through which we passed. It was especially numerous in the Yellowstone Park late in August and early in September, when it formed a large division of the army of small birds that were being constantly started from the ground.

### PARIDÆ.

#### 8. PARUS ATRICAPILLUS SEPTENTRIONALIS, (*Harris*) *Allen.*

LONG-TAILED CHICKADEE.

Common along the Missouri River and in the mountains.

#### 9. PARUS MONTANUS, *Gamb.*

MOUNTAIN CHICKADEE.

A few birds of this species were seen searching for food among the pines that grow among the Bad Lands near the mouth of the Judith River. In habits, they seemed to resemble closely the preceding species; but the note was slightly different, being more slowly uttered, almost drawled in fact.

### SITTIDÆ.

#### 10. SITTA CAROLINENSIS ACULEATA, (*Cass.*) *Allen.*

SLENDER-BILLED NUTHATCH.

Common in the Yellowstone Park and in the mountains toward the Missouri River.

### TROGLODYTIDÆ.

#### 11. SALPINCTES OBSOLETUS, (*Say*) *Cab.*

ROCK WREN.

Very abundant in the Bad Lands along the Missouri and among the sandstone bluffs near the Judith Mountains. These birds were also common in the Little Belt Mountains near White-tailed Deer Creek, darting about among old stumps and wood-piles, just as they do among the bluffs of the Bad Lands. A nest found near Haymaker's Creek was nothing more than a short burrow under a flat rock. The little chamber at the end contained three nearly full-grown young.

#### 12. TROGLODYTES AËDON PARKMANI, (*Aud.*) *Coues.*

WESTERN HOUSE WREN.

Abundant on the Missouri near Bismarck.

13. CISTOTHORUS PALUSTRIS, (*Wils.*) *Baird*.

LONG-BILLED MARSH WREN.

This species was seen but once, on a reedy slough near the bridge over the Yellowstone River.

## ALAUDIDÆ.

14. EREMOPHILA ALPESTRIS LEUCOLÆMA, (*Forst.*) *Coues*.

HORNED LARK ; SHORE LARK.

Abundant everywhere on the plains.

## MOTACILLIDÆ.

15. ANTHUS LUDOVICIANUS, (*Gm.*) *Licht*.

TITLARK.

A single individual of this species was seen among the snows on the highest point of the Bridger Mountains.

16. NEOCORYS SPRAGUEI, (*Aud.*) *Scl*.

MISSOURI SKYLARK.

This little-known bird was not uncommon between Camp Lewis and Camp Baker. It was most often seen in the road searching for food, and, when alarmed, running along in the ruts as the Shore Larks are often seen to do. It was usually seen in company with these latter, and seems somewhat to resemble them in its habits.

## SYLVICOLIDÆ.

17. DENDRÆCA ÆSTIVA, (*Gm.*) *Baird*.

YELLOW WARBLER ; SUMMER YELLOWBIRD.

Abundant and breeding along the Missouri River.

18. DENDRÆCA AUDUBONII, (*Townsend.*) *Baird*.

AUDUBON'S WARBLER.

A family of this species, the young of which had but just left the nest, was seen among the pines near the Yellowstone Bridge.

19. (?) SEIURUS AUROCAPILLUS, (*Linn.*) *Sw*.

GOLDEN-CROWNED THRUSH.

The characteristic song of this species was often heard along the Missouri ; but I was unable to secure any specimens, or even to see the birds.

20. GEOTHLYPIS TRICHAS, (*Linn.*) *Cab*.

MARYLAND YELLOWTHROAT.

Seen quite often along the Missouri.

21. GEOTHLYPIS PHILADELPHIA MACGILLIVRAYI, (*Wils.*) *Allen*.

WESTERN MOURNING WARBLER.

A female of this species was found dead on the shore of the Yellowstone Lake.

22. ICTERIA VIRENS, (*Linn.*) *Baird*.

YELLOW-BREASTED CHAT.

Abundant along the Missouri River. Its familiar notes were heard whenever we passed a wooded bottom, and its curious antics often seen.

23. SETOPHAGA RUTICILLA, (*Linn.*) *Sco*.

REDSTART.

Seen on several occasions in the Missouri River bottom.

## TANAGRIDÆ.

24. PYRANGA LUDOVICIANA, (*Wils.*) *Bon*.

LOUISIANA TANAGER.

Observed quite frequently in the Yellowstone Park.

## HIRUNDINIDÆ.

25. HIRUNDO HORREORUM, *Barton*.

BARN SWALLOW.

Abundant throughout the region which we traversed.

26. HIRUNDO THALASSINA, *Sco*.

VIOLET-GREEN SWALLOW.

Very numerous about Fort Ellis, and more or less abundant throughout the Yellowstone Park.

27. PETROCHELIDON LUNIFRONS, (*Say*) *Scl*.

CLIFF SWALLOW.

Extremely abundant along the Missouri River, breeding on many of the high bluffs between which it flows. They were also common in the mountains, and especially so about Camp Baker.

Early one morning late in July, while traveling along the road near the Judith Mountains, I was surprised to see great numbers of these birds feeding on the ground. A little investigation showed me that they were picking up insects that had been chilled by the severe frost of the previous night, and were as yet unable to fly.

28. COTYLE RIPARIA, (*Linn.*) *Boie*.

SAND MARTIN ; BANK SWALLOW.

Observed in large numbers on the Missouri River; often breeding in the same bluffs to which the preceding species had attached their nests.

29. PROGNE SUBIS, *Baird*.

PURPLE MARTIN.

Abundant in the mountains, where it breeds.

## AMPELIDÆ.

30. AMPELIS GARRULUS, *Linn.*

BOHEMIAN WAXWING.

At Camp Baker, I saw the remains of an individual of this species which, I was informed by Major Freeman, had been taken there in winter. It is said to be common there at that season.

31. AMPELIS CEDRORUM, (*Vicill.*) *Gray.*

CEDAR-BIRD.

Quite common along the Missouri.

## LANIIDÆ.

32. COLLURIO LUDOVICIANUS EXCUBITOROIDES, (*Sw.*) *Coues.*

WHITE-RUMPED SHRIKE.

Common along wooded ravines on the plains west of the Missouri.

## FRINGILLIDÆ.

33. CARPODACUS CASSINI, *Baird.*

CASSIN'S PURPLE FINCH.

A single individual of this species was taken at the Mud Volcano in the Yellowstone Park.

34. LOXIA CURVIROSTRA AMERICANA, (*Wils.*) *Coues.*

RED CROSS-BILL.

This species was found in great numbers near the Falls of the Yellowstone in August. It had undoubtedly bred in the immediate vicinity, as I saw old birds feeding young just from the nest. Their food seemed to consist entirely of the seeds of the pine. The males uttered almost constantly a short monotonous whistle.

35. CHRYSOMITRIS PINUS, (*Wils.*) *Bp.*

PINE FINCH.

Though this species was noticed several times while in the park, it did not seem to be common there. The birds were seen among the pines or else feeding on thistle-blows, after the manner of *C. tristis*.

36. CHRYSOMITRIS TRISTIS, (*Linn.*) *Bp.*

YELLOW-BIRD ; THISTLE-BIRD.

Abundant along the Missouri and on the plains near the mountains.

37. PLECTROPHANES ORNATUS, *Townes.*

CHESTNUT-COLLARED LONGSPUR.

Abundant, and one of the most characteristic birds of the high plains. The most eastern point at which I saw it was Jamestown, Dak. From that place west, it was more or less common until we left the plain country. Late in July, I took, near Box Elder Creek, young birds that had but just left the nest.



38. PLECTROPHANES MACCOWNII, *Laucr.*

MACCOWN'S LONGSPUR.

Abundant, breeding on the plains in company with the preceding. I secured many fully-fledged birds of the year late in July.

39. PASSERCULUS SAVANNA, (*Wils.*) *Bp.*

SAVANNAH SPARROW.

Quite common about Camp Baker.

40. POOCÆTES GRAMINEUS CONFINIS, (*Gm.*) *Baird.*

GRASS FINCH; BAY-WINGED BUNTING.

Abundant everywhere on the plains.

41. COTURNICULUS PASSERINUS PERPALLIDUS, (*Wils.*) *Ridgway.*

YELLOW-WINGED SPARROW.

Common on the plains near the Missouri.

42. MELOSPIZA MELODIA FALLAX, (*Wils.*) *Ridgway.*

WESTERN SONG SPARROW.

Common in the mountains, especially in low brush along the banks of streams, but so shy as to be quite difficult of approach.

43. JUNCO OREGONUS, (*Townsend.*) *Scl.*

OREGON SNOWBIRD.

Very abundant in the mountains of the Yellowstone Park.

44. SPIZELLA MONTICOLA, (*Gm.*) *Baird.*

TREE SPARROW.

Three or four individuals of this species were seen in the Bridger Mountains early in September.

45. SPIZELLA SOCIALIS ARIZONÆ, (*Wils.*) *Coues.*

WESTERN CHIPPY.

Abundant in the mountains.

46. SPIZELLA PALLIDA, (*Sw.*) *Bp.*

CLAY-COLORED SPARROW.

Abundant on the plains in bushy ravines and along the river-bottoms.

47. ZONOTRICHIA LEUCOPHRYS, (*Forst.*) *Sw.*

WHITE-CROWNED SPARROW.

This species was abundant in the Yellowstone Park. It was seen during August and September in small flocks of ten or twelve individuals, old and young, feeding on the ground in company with *S. arctica* and a host of small sparrows.

48. CHONDESTES GRAMMACA, (*Say*) *Bp.*

LARK FINCH.

Very abundant on the plains near the Missouri River and westward.

49. CALAMOSPIZA BICOLOR, (*Towns.*) *Bp.*

WHITE-WINGED BLACKBIRD.

Very abundant on the plains, especially in somewhat broken country along ravines and dry water-courses, and also in the neighborhood of isolated buttes. I found it breeding near Little Crooked Creek.

50. EUSPIZA AMERICANA, (*Gm.*) *Bp.*

BLACK-THROATED BUNTING.

A breeding female taken in the Missouri River bottom near Bismarck early in July was the only individual of this species seen.

51. CYANOSPIZA AMÆNA, (*Say*) *Baird.*

LAZULI FINCH.

This beautiful species was abundant along the Missouri River bottom.

52. PIPILLO MACULATUS ARCTICA, (*Sw.*) *Coues.*

ARCTIC TOWHEE.

Abundant, breeding in the Missouri River bottom, and often seen about Camp Baker.

## ICTERIDÆ.

53. DOLICHONYX ORIZIVORUS, (*Linn.*) *Sw.*

BOB-O-LINK ; RICE-BIRD.

This species was breeding in large numbers in the wide river-bottom near Bismarck when we passed through early in July. I saw none except here during the trip.

54. MOLOTHRUS PECORIS, (*Gm.*) *Sw.*

COW-BUNTING.

Abundant everywhere.

55. AGELEUS PHENICEUS, (*Linn.*) *Vicill.*

RED-WINGED BLACKBIRD.

Noticed on several occasions along the Missouri River.

56. STURNELLA MAGNA NEGLECTA, (*Linn.*) *Allen.*

WESTERN MEADOW LARK.

Abundant all through the open country. We heard their sweet songs all through the summer and as late as September 18.

57. SCOLECOPHAGUS CYANOCEPHALUS, (*Wagl.*) *Cab.*

BLUE-HEADED GRACKLE.

I found this species very abundant near Carroll, and, in fact, everywhere on the plains. At Little Crooked Creek, their nests were found placed on little "greasewood" bushes only two or

three feet in height. The young were most of them so well grown at this time (July 15) that they would leave the nest at my approach and fly a few yards to another bush, where they would sit uttering the sharp cry that we hear from all young blackbirds at that age. When I approached the nests or young, flocks of a dozen or more old birds would fly over me uttering constantly cries of anxiety.

About Camp Baker, they were very numerous; the flocks being so large as fairly to blacken the ground where they alighted. The birds were familiar enough and readily ventured up to our tent doors.

### CORVIDÆ.

#### 58. CORVUS CORAX, *Lin.*

##### RAVEN.

Rather common on the plains west of Carroll.

#### 59. CORVUS AMERICANUS, *Aud.*

##### CROW.

Extremely abundant on the streams flowing out of the Sweet Grass Hills. They were breeding here in the tall undergrowth that fringed Box Elder and Armell's Creek, and on the return march were seen in large flocks feeding on the dead buffalo that strewed the prairie. It is hardly necessary to remark that they were very tame, in striking contrast to their eastern relatives.

#### 60. PICICORVUS COLUMBIANUS, (*Wils.*) *Bp.*

##### CLARK'S CROW.

I first noticed this species near Camp Baker, but it did not become very abundant until we reached the Yellowstone River on our road to the park. Its striking plumage and loud harsh voice makes this bird one of the most noticeable features of the animal life of this region.

#### 61. PICA MELANOLEUCA HUDSONICA, (*Sab.*) *Coues.*

##### MAGPIE.

Abundant everywhere in the mountains, and universally execrated by hunters and trappers on account of the injury it does in winter to the fresh skins that are stretched out to dry, and the annoyance that it causes to their sore-backed animals.

#### 62. CYANURUS STELLERI MACROLOPHUS, (*Baird*) *Allen.*

##### LONG-CRESTED JAY.

Abundant from the Bridger Mountains through the Yellowstone Park. In habits, this species resembles most closely *C. cristatus*; but its notes are quite different, being harsh and grating, more like those of *P. columbianus*.

#### 63. PERISOREUS CANADENSIS CAPITALIS, *Baird.*

##### GRAY JAY.

I found this species extremely abundant all through the mountains of the Yellowstone Park. They are noisy restless birds, continually passing to and fro among the branches of the pines with easy, graceful movements. They are at all times bold and even impudent, remaining in the trees, beneath which we encamped, and frequently descending to the ground within a few feet of some one of the party to pick up a piece of meat or a crumb of bread. When a morsel of food has been secured, it is taken to a low limb and there leisurely broken up and devoured.

This species is said to cause considerable annoyance to trappers by removing the bait from their mink and marten traps.

## TYRANNIDÆ.

64. TYRANNUS CAROLINENSIS, (*Gm.*) *Temm.*

## KINGBIRD.

Abundant along the Missouri and on the plains to the west.

65. TYRANNUS VERTICALIS, *Say.*

## ARKANSAS FLYCATCHER.

Abundant along the Missouri and on the plains.

66. SAYORNIS SAYUS, (*Bp.*) *Baird.*

## SAY'S FLYCATCHER.

I saw but two or three individuals of this species, all of them near Crooked Creek.

67. CONTOPUS VIRENS RICHARDSONII, (*Sw.*) *Allen.*

## WESTERN WOOD PEWEE.

I frequently noticed this species while in the Geyser Basins, but did not observe it at any other point on the route. In the Lower Geyser Basin, I saw one of these birds taken by a Sharp-shinned Hawk, which was immediately attacked with the utmost fury by another Pewee. The latter kept up the chase for a considerable distance; finally following his enemy into the woods.

## CAPRIMULGIDÆ.

68. CHORDEILES VIRGINIANUS HENRYI, (*Gm.*) *Coues.*

## WESTERN NIGHTHAWK.

This species was common on the plains. Near Little Crooked Creek, late in July, I took a female sitting on two eggs, which were far advanced toward hatching.

## ALCEDINIDÆ.

69. ALCEDO ALCYON, (*Linn.*) *Boie.*

## KINGFISHER.

Abundant on all streams which we passed, though apparently less common on the Missouri below Carroll than elsewhere. This is probably due to the fact that the river below this point is very muddy, and the Kingfishers are hence unable to find and pursue their prey as successfully as in the clear streams of the mountains.

## CUCULIDÆ.

70. COCCYZUS ERYTHROPHthalmus, (*Wils.*) *Bp.*

## BLACK-BILLED CUCKOO.

Common along the Missouri, at least as far as Wolf Point, forty miles below Fort Peck.

## PICIDÆ.

71. PICUS VILLOSUS HARRISII, (*Linn.*) *Allen.*

## HARRIS' WOODPECKER.

Seen once in the Little Belt Mountains near Camp Baker.

72. *PICUS PUBESCENS*, *Linn.*

DOWNY WOODPECKER.

Occasionally noticed in the Yellowstone Park near the bridge.

73. *SPHYRAPICUS THYROIDEUS*, (*Cass.*) *Baird.*

BLACK-BREASTED WOODPECKER.

Observed but once, near Tower Creek in the Yellowstone Park.

74. *MELANERPES ERYTHROCEPHALUS*, (*Linn.*) *Sw.*

RED-HEADED WOODPECKER.

Very common wherever there was timber.

75. *MELANERPES TORQUATUS*, (*Wils.*) *Bp.*

LEWIS' WOODPECKER.

We first saw this species in the mountains near Camp Baker, where it was quite abundant. It was afterward seen in considerable numbers near the mouth of Trail Creek, and along other little timbered streams running into the Yellowstone River. These birds were several times seen searching for food upon the ground after the manner of *Colaptes*.

76. *COLAPTES AURATUS*, (*Linn.*) *Sw.*

GOLDEN-WINGED WOODPECKER; FLICKER.

Abundant along the Missouri River, at least as far up as Fort Buford.

77. *COLAPTES MEXICANUS*, *Sw.*

RED-SHAFTED WOODPECKER.

Abundant about Camp Baker and in the Yellowstone Park.

## STRIGIDÆ.

78. *BUBO VIRGINIANUS*, (*Gm.*) *Bp.*

GREAT HORNE OWL.

Seen once near Carroll.

79. *OTUS PALUSTRIS*, (*Bechst.*) *Gould.*

SHORT-EARED OWL.

Common on the plains.

80. *SPHIEOTYTO CUNICULARIA HYPOGÆA*, (*Bp.*) *Coues.*

BURROWING OWL.

Seen occasionally on the plains.

## FALCONIDÆ.

81. *CIRCUS CYANEUS HUDSONIUS*, (*Linn.*) *Schl.*

MARSH HAWK.

Very common throughout the country which we passed over.

82. NISUS FUSCUS, (*Gm.*) *Kaup.*

## SHARP-SHINNED HAWK.

This species was seen but twice; one specimen having been taken on the shores of the Yellowstone Lake, and another observed in the Lower Geyser Basin.

83. NISUS COOPERI, (*Bp.*) *Ridgway.*

## COOPER'S HAWK.

A single individual of this species was seen while we were ascending the Missouri.

84. FALCO LANIARIUS POLYAGRUS, (*Cass.*) *Ridgway.*

## AMERICAN LANNER FALCON.

This species, although not common in the country through which we passed, was occasionally seen, and no doubt bred on the mountains. I felt quite sure that a pair had a nest on Cone Butte, but was unable to find it. While at Camp Baker, a bird of this species used to fly over our camp every morning to a corral just beyond, where he would secure a blackbird or two for breakfast, and then return to the mountains.

85. FALCO COMMUNIS ANATUM, (*Gm.*) *Ridgway.*

## DUCK HAWK.

While ascending the Missouri, we several times saw the nests of this species placed on little ledges of the high washed clay bluffs by which the river is bordered. These nests all contained unfledged young. One or both of the parents was always to be seen sitting near the nest. This species was abundant in the valley of the Yellowstone above Emigrant Peak, and had no doubt bred there, as I took a very young bird.

86. FALCO COLUMBARIUS (?) RICHARDSONI, (*Linn.*) *Ridgway.*

## RICHARDSON'S FALCON.

A Pigeon Hawk, probably to be referred to this variety, was seen September 5, hovering low over the summit of the Bridger Mountains.

87. FALCO SPARVERIUS, *Linn.*

## SPARROW HAWK.

Abundant on the plains and along the Yellowstone River.

88. BUTEO BOREALIS, (*Gm.*) *Vieill.*

## RED-TAILED HAWK.

Seen on several occasions on the Missouri River.

89. BUTEO BOREALIS CALURUS, (*Gm.*) *Cass.*

## WESTERN RED-TAILED HAWK.

This was the most common hawk seen in the mountains. We must have seen fifteen or twenty the day that we passed through Bridger's Pass; and they were equally abundant in some parts of the Yellowstone Park.

90. BUTEO SWAINSONI, *Bp.*

## SWAINSON'S HAWK.

Rather numerous in the valley of the Yellowstone.

91. ARCHIBUTEO LAGOPUS SANCTI-JOHANNIS, (*Gm.*) *Ridgway*.

## ROUGH-LEGGED HAWK.

Abundant about Gardiner's Springs and in the valley of the Yellowstone.

92. ARCHIBUTEO FERRUGINEUS, (*Licht.*) *Gray*.

## FERRUGINOUS HAWK.

This striking species was common on the plains from the Missouri River westward until we reached the mountains. It was often seen sitting on the little mounds raised by the prairie-dogs, gazing intently at the entrance of the burrow, apparently waiting to seize the first one that should appear.

93. PANDION HALIAËTUS, (*Linn.*) *Cuv.*

## FISH-HAWK.

The Fish-hawk, although occasionally seen on the Missouri, is not, in my experience at least, common on that river below the point where it becomes muddy. Above Carroll, however, the river is quite clear, and there it seems much more numerous. It was nowhere so abundant as on the Yellowstone River; and while traveling along that stream I saw from six to twelve of these birds every day. At the falls of the Yellowstone, this species was constantly in sight, sometimes sailing like a black speck close to the water far below us, or balancing itself on some dead pine that grew half-way up the sides of the cañon.

94. AQUILA CHRYSAËTOS, *Linn.*

## GOLDEN EAGLE.

Occurs more or less frequently all through the country which we traversed, but is most often seen in the mountains and on high wooded buttes. I saw it at the Forks of the Musselshell, near Bridger Pass, and once over the Missouri River.

95. HALIAËTUS LEUCOCEPHALUS, (*Linn.*) *Sw.*

## WHITE-HEADED EAGLE.

Seen several times on the Missouri.

## CATHARTIDÆ.

96. CATHARTES AURA, (*Linn.*) *Ill.*

## TURKEY BUZZARD.

Abundant on the plains.

## COLUMBIDÆ.

97. ECTOPISTES MIGRATORIA, (*Linn.*) *Sw.*

## PASSENGER PIGEON.

Seen in small companies in July along the Missouri River bottom, where it was doubtless breeding.

98. ZENÆDURA CAROLINENSIS, (*Linn.*) *Bp.*

## COMMON DOVE; TURTLE DOVE.

Common everywhere.

## TETRAONIDÆ.

99. TETRAO OBSCURUS, *Say*.

## DUSKY GROUSE; BLUE GROUSE.

We found this species very abundant from the time that we reached the mountains until we left them again. The first seen were a mother with a brood of small young, taken in the Judith Mountains. From this point to and through the Yellowstone Park they were frequently met with.

There seems to be a wide variation in the time at which these birds deposit their eggs. In the Musselshell Cañon and along Deep Creek I saw many broods of half-grown chicks, and in some cases the young were nearly as large as the parent bird. This was late in July. On the 4th of August, I saw a brood on an extensive prairie in the Little Belt Mountains near Camp Baker, which must have been less than a week old; at all events, they were so young that I had no difficulty in catching several of them alive. Two weeks later I saw a brood on Trail Creek near the Yellowstone River, that were certainly not more than ten days or two weeks old.

The females with their young seem to pass the night in the creek-bottoms, and it is in such places that they must be looked for early in the morning and late in the afternoon. About 9 or 10 o'clock a. m., they proceed on foot to the uplands, where they remain until about two hours before sunset, when they come down to the stream to drink, and remain all night. In returning from the hills, they always fly. The young, when alarmed or uneasy, have a fashion of erecting the feathers of the sides of the neck just below the head, which, when seen at a little distance, gives them a very odd appearance. The female, when the young birds are nearly approached or captured, makes no attempt to draw away the enemy by any of the artifices employed by *Bonasa umbellus*, but contents herself with wandering anxiously about at a short distance, holding the tail quite erect, and clucking after the manner of the domestic hen under similar circumstances. The young when well grown are delicious eating, and many were killed by us for food when large game could not be obtained. When a brood has been scattered, the individuals which compose it lie well and furnish fair shooting. Though swift fliers, they are easily killed in the open, and I secured most of those that I killed with mustard-seed shot. The birds would sometimes let me approach within three or four feet of them before rising, and they were pretty objects as they crouched waiting for me to take one more step toward them. The body flattened out on the ground, the head and neck straight and pressed against the earth, the tail slightly elevated, and all the while the bright brown eye watching for the slightest sign that the bird's presence was discovered, together made up a picture which, though familiar enough, ever possesses a new interest for me.

But one brood was seen in heavy pine timber. In this case, the family, which consisted of the mother and six or eight well-grown young, took refuge in the lower limbs of a large pine, from which they refused to move until several shots had been fired at them.

Having in mind Dr. Cooper's statement that, in Oregon and Northern California, this species is not seen in winter, I made diligent inquiry among the settlers in the mountains of Montana for information on this point. All of those with whom I spoke informed me that the Blue Grouse was apparently quite as abundant in winter as in summer.

It is to be noticed that I found this species almost invariably in the open creek-bottoms, and sometimes in quite extensive prairies, although always among the mountains. This state of things, which is exactly the reverse of the experience of most other observers, was no doubt due, in part at least, to the fact that the birds had their tender young with them, and that these would be more safe in the valleys than on the mountain-sides.

During the trip, not a single adult male was secured. On the high mountains, however, at and near timber-line, I several times started single birds and small packs of this species. The only one secured in such situations was a barren female; but I think it probable that most of those seen here were old males.

The specimens preserved on the trip seem to be intermediate between varieties *obscurus* and *richardsoni*.



100. *CENTROCERCUS UROPHASIANUS*, (Bp.) Sw.

## SAGE GROUSE.

We first saw this species near Wolf Point on the Missouri, where several were started from the river-bottom by the passage of the steamboat. On Box Elder Creek, where we remained in camp for several days late in July, they were extremely numerous, and broods of young were seen of all ages, from the little chicks that could fly but a few feet to the large strong-winged birds that almost equaled their parents in weight. All were painfully ignorant of the effect of fire-arms, and I have seen a brood of ten or a dozen well-grown birds walk quietly along before two men who were trying to shoot their heads off with rifles, until half their number had been killed. At each report, they would stretch up their necks and gaze around as if a little curious to find out whence the noise proceeded and what it meant, and would then move leisurely on toward the hills, feeding as they went. If, however, a ball touched, but did not fatally wound or cripple a bird, and it rose or fluttered about on the ground, the whole flock took the alarm and were off without delay.

About Box Elder, they seemed to pass the night on the uplands, coming down to the water morning and evening, and retiring to the higher ground before the sun became hot in the morning, and just about sunset in the evening. The young, even when nearly full grown, utter a plaintive peeping cry, which has the peculiar effect of appearing to come from a long distance off, even though the bird may be quite close at hand.

When seen during the summer, the birds were, of course, in families; but on our return march in September, they had commenced collecting together, and packs of from thirty to fifty individuals were several times seen.

101. *PEDICECETES PHASIANELLUS COLUMBIANUS*, (Ord.) Coues.

## SHARP-TAILED GROUSE.

I saw this species only on the plains, a state of things which somewhat surprised me; for, although, of course, essentially a prairie bird, I found it during the summer of 1874 in great numbers among the Black Hills of Dakota. They were more numerous on Box Elder Creek than at any other point; and indeed they seem to prefer streams which have a wide bottom overgrown with rose-bushes and other shrubs, on the fruit of which they feed. The young birds were from one-half to two-thirds grown late in July.

During our passage down the Missouri River, we often saw this species on the dry sand-bars that dotted the river, rolling and dusting themselves in the sand. I did not see these birds roosting on trees until about September 10, at which time the weather at night was quite cold.

102. *BONASA UMBELLUS UMBELLOIDES*, (Linn.) Baird.

## ROCKY MOUNTAIN RUFFED GROUSE.

Although this species was said to be extremely abundant in the Yellowstone Park, we saw very few of them, not twenty in all. In habits, they seem to resemble almost exactly the eastern variety. A female, with six or eight young only about a week old, was seen August 19. The young, instead of hiding, flew into the lowest branches of a dead pine, a distance of three or four feet, which they just managed to accomplish, while the female fluttered about at my feet as if in the death agony. I had not the heart to molest the charming little family, and after watching them for a short time I moved off, leaving them to their own devices.

## CHARADRIIDÆ.

103. *ÆGIALITIS VOCIFERUS*, (Linn.) Bp.

## KILLDEER PLOVER.

Abundant, breeding on the plains near water.

104. *EGIALITIS MONTANUS*, (*Townsend*.) *Baird*.

## MOUNTAIN PLOVER.

I did not find this species at all abundant in that portion of Montana which we traversed. Two females, each followed by a newly-hatched young one, were taken near Haymaker's Creek August 1, and were the only individuals observed during the trip. The mothers displayed much anxiety for their young, and endeavored to lead me away from them by the artifices usual with this family of birds. The young were pretty but rather awkward little objects, and tottered along with uncertain steps, as if their legs were too long and they found difficulty in balancing themselves upon them.

## RECURVIROSTRIDÆ.

105. *RECURVIROSTRA AMERICANA*, *Gm.*

## AVOCET.

This species abounds on the small alkaline pools that are so common in Dakota, and is quite common in that portion of Montana through which we passed. It was quite numerous on the Yellowstone River above the falls, where the stream is wide, and the wet, grassy banks slope gradually down to the water's edge; and many were seen on the shores of the lake. I also saw a large flock on a small pool near Fort Ellis. They were rather shy, rising in a thick flock at long gunshot, and making the air ring with their shrill cries. A wounded bird unable to fly attempted to escape by diving, making use of the wings for progression under water.

## PHALAROPODIDÆ.

106. *LOBIPES HYPERBOREUS*, (*Linn.*) *Cuv.*

## NORTHERN PHALAROPE.

A flock of thirty or forty of these graceful birds was seen on a small pool near Fort Ellis.

## SCOLOPACIDÆ.

107. *GALLINAGO WILSONII*, (*Temm.*) *Bp.*

## WILSON'S SNIFE.

One individual seen near Fort Ellis.

108. *TRINGA MINUTILLA*, *Vieill.*

## LEAST SANDPIPER.

This species was only observed near Fort Ellis, where, however, it was abundant early in September.

109. *TRINGA BAIRDII*, *Coues*.

## BAIRD'S SANDPIPER.

This species was noticed at Fort Ellis, at Gardiner's Springs, and in the Lower Geyser Basin. In the last-mentioned locality, it was seen in flocks of from fifty to sixty individuals.

110. *TOTANUS SEMIPALMATUS*, (*Gm.*) *Temm.*

## WILLET.

Abundant on alkaline pools in Dakota and on the Yellowstone Lake.

111. TOTANUS MELANOLEUCUS, (*Gm.*) *Vicill.*

## GREAT YELLOWSHANKS; TELLTALE.

Abundant on the Yellowstone Lake, and, during September, on the Missouri and streams flowing into it.

112. TOTANUS FLAVIPES, (*Gm.*) *Vicill.*

## LESSER YELLOWLEGS.

A few birds of this species were seen near Fort Ellis and on the shores of the Yellowstone Lake.

113. TOTANUS SOLITARIUS, (*Wils.*) *Aud.*

## SOLITARY SANDPIPER.

This species was observed but twice during the summer; once near Fort Ellis and once in the Upper Geyser Basin.

114. TRINGOIDES MACULARIUS, (*Linn.*) *Gray.*

## SPOTTED SANDPIPER.

Abundant along the Missouri River, and along mountain-streams as well. On the Missouri, when startled by the approach of the steamboat, they would fly a short distance, and then alight on the slender and pliable twigs projecting from the fresh beaver-houses, on which they would balance themselves with the oddest bobbings and noddings imaginable.

115. ACTITURUS BARTRAMIUS, (*Wils.*) *Bp.*

## BARTRAMIAN SANDPIPER; UPLAND PLOVER.

Abundant on the plains in Montana. Late in July, 1 secured young birds nearly as strong on the wing as their parents, and at the same time noticed broods of newly-hatched young.

116. NUMENIUS LONGIROSTRIS, *Wils.*

## LONG-BILLED CURLEW.

Abundant on the plains. Near Box Elder, and all along the base of the Judith Mountains, large scattering companies of these birds were seen feeding on the prairies. They were quite shy, and could not often be approached within gun-range except by strategy. As we drew near, they would rise, one after another, each uttering his loud, rolling note, until finally all were on the wing. They would then, in a dense flock, for a short time perform a variety of beautiful evolutions high in the air, finally re-alighting at a considerable distance.

## ARDEIDÆ.

117. ARDEA HERODIAS, *Linn.*

## GREAT BLUE HERON.

This species was abundant along the Missouri River in July and September. Prominent objects as they stood on the bare sand-bars, they often drew half a dozen rifle-shots from the steamer as it passed.

## GRUIDÆ.

118. GRUS CANADENSIS, (*Linn.*) *Temm.*

## SANDHILL CRANE.

Very abundant all through the Yellowstone Park, but not seen on the plains.

## RALLIDÆ.

119. FULICA AMERICANA, *Gm.*

COOT; MUD-HEN.

Abundant in Dakota.

## ANATIDÆ.

120. (?) CYGNUS BUCCINATOR, *Rich.*

TRUMPETER SWAN.

A single swan seen in flight at the Yellowstone Lake was probably of this species. It was taken on this water by Mr. Merriam in 1872.

121. ANSER HYPERBOREUS, *Pall.*

SNOW GOOSE.

A flock of these birds were seen on the Yellowstone River near the lake; and the species was again observed in considerable numbers on the alkaline pools near the Missouri River in October.

122. BRANTA CANADENSIS, (*Linn.*) *Gray.*

CANADA GOOSE; COMMON WILD GOOSE.

The common wild goose was seen in the greatest abundance on the Missouri River, and was numerous on the Yellowstone Lake as well. Early in July, while on the way from Bismarck to Carroll, we saw many broods of young, and, when coming down the river late in September, hardly an hour passed without our seeing one or more large flocks of these birds. The young goslings are pretty little things, and the devotion to them of the mother is interesting. Four was the smallest number seen in a brood, and nine the largest. On one occasion I saw what seemed to be a union of two families. The two females swam in advance side by side, while the ganders brought up the rear, and the nine young ones followed directly behind the females.

When approached while in the water, the birds would gradually sink until nothing but the bill and upper part of the head appeared above the surface; the young would then disappear one after another, and last of all the old female would dive. The male always flew off to a safe distance before the diving commenced; but in no instance did I see the mother leave her brood.

123. ANAS BOSCHAS, *Linn.*

MALLARD.

Abundant, breeding along the Missouri and on smaller streams in the mountains.

124. DAFILA ACUTA, (*Linn.*) *Bp.*

PIN-TAIL DUCK.

Observed in considerable numbers on the Yellowstone Lake.

125. CHIAULELASMUS STREPERUS, (*Linn.*) *Gray.*

GADWALL; GRAY DUCK.

Abundant on alkaline pools in Dakota; a female with a brood of newly-hatched young was seen on Box Elder.

126. MARECA AMERICANA, (*Gm.*) *Steph.*

AMERICAN WIDGEON.

Abundant on many of the streams in Dakota and Montana.

127. *QUERQUEDULA CAROLINENSIS*, (Gm.) Steph.

## GREEN-WINGED TEAL.

Abundant, breeding on streams in Eastern Montana. On Deep Creek, early in August, I saw many broods of young apparently only a few days old.

128. *QUERQUEDULA DISCORS*, (Linn.) Steph.

## BLUE-WINGED TEAL.

Seen in considerable numbers on the Missouri River in September.

129. *SPATULA CLYPEATA*, (Linn.) Boie.

## SHOVELER.

Quite abundant on alkaline pools in Dakota.

130. *FULIGULA AFFINIS*, Eyton.

## LESSER BLACKHEAD.

Abundant on alkaline pools in Dakota.

131. *BUCEPHALA ALBEOLA*, (Linn.) Bd.

## DIPPER; BUFFLE-HEAD.

This species was rather common on the little mountain lakes and streams of Montana. On one of the forks of Deep Creek, a female with half a dozen young not yet able to fly, was seen, and several of the young secured. Afterward families of this species were quite frequently observed

132. (?) *CEDEMIA FUSCA*, (Linn.) Flem.

## WHITE-WINGED SURF DUCK.

Seen on the Yellowstone Lake in August. I mention this species with a query, because, although I recognized it satisfactorily to myself, I took no specimens. The locality is quite out of the range usually ascribed to this bird.

133. *MERGUS MERGANSER*, Linn.

## GOOSANDER.

Observed in considerable numbers on the Yellowstone Lake. In August, the young were not yet able to fly.

134. *MERGUS CUCULLATUS*, Linn.

## HOODED MERGANSER.

Rather common along the Missouri River.

## PELECANIDÆ.

135. *PELECANUS TRACHYRHYNCHUS*, Lath.

## WHITE PELICAN.

Very abundant on the Yellowstone Lake, but shy and difficult of approach.

## LARIDÆ.

136. LARUS DELAWARENSIS, *Ord.*

RING-BILLED GULL.

Common on Yellowstone Lake and on the Missouri River.

## COLYMBIDÆ.

137. COLYMBUS TORQUATUS, *Brunn.*

LOON; GREAT NORTHERN DIVER.

Observed frequently on alkaline pools in Dakota and on the Missouri River.

## PODICIPIDÆ.

138. PODICEPS CORNUTUS, *Lath.*

HORNED GREBE.

Abundant during migrations on the Missouri, and all streams and pools in the mountains.

139. PODILYMBUS PODICEPS, (*Linn.*) *Lawr.*

PIED-BILLED GREBE.

Abundant on alkaline pools in Dakota.

## PARTIAL LIST OF THE MAMMALS AND BIRDS OF THE YELLOWSTONE PARK.

This list, which is of course very incomplete, consists merely of the observations of Mr. C. H. Merriam in 1872 and those made by myself in 1875. Such species as were noticed by only one observer are followed by the initial letter of his name.

## MAMMALS.

1. *Nycticejus crepuscularis*, Allen, M.
2. *Vespertilio lucifugus*, LeConte, M.
3. *Vespertilio yumanensis*, Allen, M.
4. *Felis concolor*, Linn, G.
5. *Lynx rufus*, Raf., G.
6. *Lynx canadensis*, Raf., G.
7. *Canis occidentalis*, Rich., G.
8. *Canis latrans*, Say, G.
9. *Mustela americana*, Turton, G.
10. *Putorius pusillus*, Aud. & Bach., M.
11. *Gulo luscus*, Sabine.
12. *Mephitis mephitis*, Baird, M.
13. *Mephitis bicolor*, Gray, M.
14. *Ursus horribilis*, Ord.
15. *Ursus americanus*, Pallas.
16. *Sciurus hudsonius*, Pallas.
17. *Tamias quadrivittatus*, Say.

18. *Spermophilus townsendi*, Bach., M.
19. *Arctomys flaviventer*, Bach.
20. *Castor canadensis*, Kuhl.
21. *Thomomys talpoides*, Rich.
22. *Zapus hudsonius*, Coues.
23. *Hesperomys leucopus sonoriensis*, LeConte.
24. *Arvicola riparia*, Ord.
25. *Erithizon epixanthus*, Brandt.
26. *Lepus bairdii*, Hayden, M.
27. *Lagomys princeps*, Rich., M.
28. *Alce americanus*, Jardine.
29. *Cervus canadensis*, Exleben, G.
30. *Cervus macrotis*, Say, G.
31. *Antilocapra americana*, Ord. M.
32. *Ovis montana*, Cuv., G.
33. *Bos americanus*, Gmelin, G.

## BIRDS.

1. *Turdus migratorius*, Linn.
2. *Oreoscoptes montanus*, (Townsend.) Baird.
3. *Mimus carolinensis*, (Linn.) Gray.
4. *Cinelus mexicanus*, Sw.
5. *Sialia arctica*, Sw.
6. *Regulus calendula*, (Linn.) Licht., M.
7. *Parus atricapillus septentrionalis*, (Harris) Allen, G.
8. *Parus montanus*, Gambel, M.
9. *Sitta carolinensis aculeata*, (Cass.) Allen.
10. *Troglodytes ædon parkmanni*, (Aud.) Coues, M.
11. *Cistothorus palustris*, (Wils.) Baird, G.
12. *Anthus ludovicianus*, (Gm.) Licht., M.
13. *Dendrocæca audubonii*, (Townsend.) Baird.
14. *Geothlypis philadelphia macgillivrayi*, (Wils.) Allen, G.
15. *Myiodiodes pusillus*, (Wils.) Bp., M.
16. *Pyrrhuloxia ludoviciana*, (Wils.) Bp.
17. *Hirundo horreorum*, Barton.
18. *Hirundo thalassina*, Sw.
19. *Petrochelidon lunifrons*, (Say) Scl.
20. *Carpodacus cassinii*, Baird.
21. *Loxia curvirostra americana*, (Wils.) Coues, G.
22. *Chrysomitris pinus*, (Wils.) Bp.
23. *Poæcetes gramineus confinis*, (Gm.) Bd.
24. *Melospiza melodia fallax*, (Wils.) Ridgway.
25. *Junco oregonus*, (Townsend.) Baird.
26. *Spizella socialis arizonæ*, (Wils.) Coues.
27. *Zonotrichia leucophrys*, Sw.
28. *Zonotrichia leucophrys intermedia*, Ridgway, M.
29. *Chondestes grammacus*, (Say) Bp., M.
30. *Goniaphea melanocephala*, (Sw.) Gray, M.
31. *Cyanospiza amana*, (Say) Baird, M.
32. *Pipilo chlorurus*, (Townsend.) Baird, M.
33. *Molothrus pecoris*, (Gm.) Sw., G.
34. *Icterus bullockii*, (Sw.) Bp., M.
35. *Picicorvus columbianus*, (Wils.) Bp., G.
36. *Pica melanoleuca hudsonica*, (Sab.) Coues.

37. *Cyanurus stelleri macrolophus*, (Baird) Allen.
38. *Perisoreus canadensis capitalis*, Baird.
39. *Tyrannus verticalis*, Say, M.
40. *Contopus borealis*, Baird, M.
41. *Contopus virens richardsonii*, (Sw.) Allen.
42. *Empidonax pusillus*, Cab., M.
43. *Ceryle alcyon*, (Linn.) Boie, G.
44. *Picus villosus harrisii*, (Linn.) Allen, M.
45. *Picus pubescens*, Linn., G.
46. *Picoides arcticus*, (Sw.) Gray, M.
47. *Picoides americanus dorsalis*, (Brehm) Baird, M.
48. *Sphyrapicus thyroideus*, (Cass.) Baird.
49. *Melanerpes erythrocephalus*, (Linn.) Sw., G.
50. *Melanerpes torquatus*, (Wils.) Bp.
51. *Colaptes mexicanus*, Sw.
52. *Otus vulgaris wilsonianus*, (Less.) Allen, M.
53. *Surnia ulula hudsonia*, (Gm.) Cones, M.
54. *Circus cyaneus hudsonius*, (Linn.) Schl.
55. *Nisus fuscus*, (Gm.) Kaup.
56. *Falco communis anatum*, (Gm.) Ridgway, G.
57. *Falco sparverius*, Linn.
58. *Buteo borealis calurus*, (Gm.) Ridgway.
59. *Buteo swainsoni*, Bp.
60. *Archibuteo lagopus saneti-johannis*, (Gm.) Ridgway, G.
61. *Pandion haliaetus*, (Linn.) Cuv.
62. *Tetrao obscurus*, Say.
63. *Bonasa umbellus umbelloides*, (Linn.) Baird.
64. *Aegialitis vociferus*, (Linn.) Bp.
65. *Recurvirostra americana*, Gm., G.
66. *Tringa bairdii*, Cones.
67. *Totanus semipalmatus*, (Gm.) Temm., G.
68. *Totanus melanoleucus*, (Gm.) Vieill.
69. *Totanus flavipes*, (Gm.) Vieill., G.
70. *Totanus solitarius*, (Wils.) Aud., G.
71. *Grus canadensis*, (Linn.) Temm., G.
72. *Cygnus buccinator*, Rich.
73. *Anser hyperboreus*, Pallas, G.
74. *Branta canadensis*, (Linn.) Gray, G.
75. *Dafila acuta*, Jenyns, G.
76. *Bucephala albeola*, (Linn.) Baird, G.
77. (?) *Gallinula fusca*, (Linn.) Flem., G.
78. *Mergus merganser* Linn, G.
79. *Pelecanus trachyrhynchus*, Lath., G.
80. *Larus delawarensis*, Ord, G.
81. *Podiceps cornutus*, Lath., G.